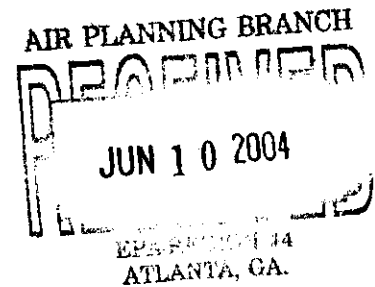




STATE OF TENNESSEE  
**DEPARTMENT OF ENVIRONMENT AND CONSERVATION**  
DIVISION OF AIR POLLUTION CONTROL  
9<sup>TH</sup> FLOOR L & C ANNEX  
401 CHURCH STREET  
NASHVILLE, TENNESSEE 37243-1531



June 7, 2004

J. I. Palmer, Jr.  
Regional Administrator  
United States Environmental  
Protection Agency  
Region IV  
61 Forsyth Street, SW  
Atlanta, Georgia 30303

Re: Clean Air Act  
Chattanooga MSA Early Action Compact

Dear Mr. Palmer:

The State of Tennessee has been working with its local air pollution control program - the Chattanooga Hamilton County Air Pollution Control Bureau and the State of Georgia to further analyze the likelihood that the Chattanooga MSA will attain the 8-hour ozone standard by December 31, 2007.

As you may know, Tennessee submitted modeling done by SAI in support of its Early Action Compact (EAC) process for the Chattanooga MSA on or about March 31, 2004. On April 15, 2004, EPA determined that it could not approve the continued effectiveness of that EAC because there was not a modeled future attainment demonstration and its belief that there were insufficient local measures for the EAC. The SAI modeling predicted an EDV of 85 ppb, but made note that Georgia's modeling for the same area using a coarse grid modeled in at an EDV of 81 ppb.

Because the MSA is shared with the State of Georgia, the Georgia EPD set out to refine its modeling analysis using a fine grid. The local government of Chattanooga-Hamilton County, Tennessee also agreed to add more local measures for consideration in the refined analysis as described in their letters to you of May 27, 2004 and June 1, 2004.

The State of Georgia modeled these additional local measures and refined their modeling analysis with the results being sent to you on June 3, 2004. This analysis provides further

Mr. Palmer  
June 7, 2004  
Page 2

proof that the Chattanooga MSA will attain the 8-hour ozone standard by December 2007. Tennessee concurs with this analysis and requests that EPA accept it as an adequate demonstration that the area will attain the standard with these additional control measures by the deadline under the EAC process. Tennessee further requests that EPA reinstate the area as an EAC area of nonattainment with a deferred effective date consistent with the provisions of the EAC program.

Please feel free to contact either Quincy Styke III or me at (615) 532-0554 if you should have further questions.

Sincerely,

*Quincy N. Styke III*

for Barry R. Stephens, P. E.  
Director  
Division of Air Pollution Control

Copy To:

Tennessee Air Pollution Control Board Members  
Betsy L. Child – Commissioner, Tennessee Department of Environment & Conservation  
Kay Prince, Dick Schutt and Karen Borel – USEPA Region IV  
Bob Colby – Chattanooga-Hamilton County Air Pollution Control Bureau  
Ron Methier – Georgia Department of Natural Resources,  
Environmental Protection Division



**BOB CORKER**  
MAYOR  
SUITE 100, CITY HALL  
CHATTANOOGA, TENNESSEE 37402

**CLAUDE RAMSEY**  
COUNTY MAYOR  
208 COURTHOUSE  
CHATTANOOGA, TENNESSEE 37402



May 27, 2004

J. I. Palmer, Jr.  
Regional Administrator  
US EPA, Region 4  
Atlanta Federal Center, 12<sup>th</sup> Floor  
61 Forsyth Street, SW  
Atlanta, Georgia 30303

Dear Mr. Palmer:

This letter serves as our further commitment to additional local control measures in order to have the 8-hour Ozone Early Action Compact for the Chattanooga, Tennessee area approved by the United States Environmental Protection Agency. We are committed to these measures and will work with the Tennessee Air Pollution Control Board to have them submitted to US EPA by December 31, 2004 for incorporation into the Tennessee State Implementation Plan for Attainment of the 8-hour Ozone Standard.

The additional local control measures to be implemented in Hamilton County and Chattanooga are:

**Seasonal Open Burning Ban.** Hamilton County and Chattanooga will amend the Hamilton County Air Pollution Control Regulations and the Chattanooga Air Pollution Control Ordinance, respectively, to provide for an open burning ban similar to the Atlanta-area ban from May 1 to September 30. We anticipate having this seasonal ban in place during the 2005 ozone season and continuing thereafter. We must go through a public comment and hearing process before the local legislative process can take place, and then work with the Tennessee Air Pollution Control Board to approve the regulation and ordinance in order to have this incorporated into the State Implementation Plan. The Tennessee Air Quality Act provides that no local air pollution control ordinance or regulation can take effect until approved by the State Air Board. We will undertake this process in an expeditious manner.

J. I. Palmer, Jr.  
May 27, 2004  
Page 2

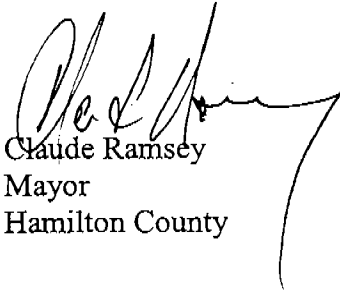
**Vehicle Inspection and Maintenance Program.** Hamilton County will institute a vehicle inspection and maintenance program for all of Hamilton County. The program will consist of On-Board Diagnostics-II testing for model year 1996-and-newer and basic inspection & maintenance for pre-1996 vehicles. The authority for us to undertake such a program was approved by the Tennessee Legislature on May 20, 2004, and is expected to be signed into law by the Governor very soon since it was an administration bill. We will work with the Tennessee Air Pollution Control Board in order to have a program approvable by them in place during the 2005 ozone season and continuing thereafter and will undertake this process in an expeditious manner, as well.

We want to extend to you our gratitude for the assistance and guidance you and your staff have given to us over the past month.

Sincerely,



Bob Corker  
Mayor  
City of Chattanooga



Claude Ramsey  
Mayor  
Hamilton County



## Chattanooga-Hamilton County Air Pollution Control Bureau

June 1, 2004

Via Federal Express

COPY

J. I. Palmer, Jr.  
Regional Administrator  
US EPA, Region 4  
Atlanta Federal Center, 12<sup>th</sup> Floor  
61 Forsyth Street, SW  
Atlanta, Georgia 30303

Dear Mr. Palmer:

This is an addendum to the local plan to achieve and maintain the 8-hour ozone standard within the Hamilton County portion of the Chattanooga, Tennessee - North Georgia MSA Early Action Compact Area and describes further local measures that will be adopted in Hamilton County, Tennessee, and implemented to achieve the 8-hour ozone standard by December 31, 2007.

Additional modeling analysis is being submitted to the United States Environmental Protection Agency on our behalf by the Georgia Department of Natural Resources, Environmental Protection Division, Air Protection Branch. This modeling shows that Hamilton County, Tennessee, will attain the 8-hour ozone standard by December 31, 2007, by implementing these additional local control measures as well as the measures submitted in the previous submittal, except for the voluntary cetane additive program which is not being pursued.

The additional local control measures being implemented in Hamilton County and Chattanooga are the following:

1. **Seasonal Open Burning Ban.** Hamilton County and Chattanooga will amend the Hamilton County Air Pollution Control Regulations and the Chattanooga Air Pollution Control Ordinance, respectively, to provide for an open burning ban similar to the Atlanta-area ban from May 1 to September 30. We had previously committed to episodic bans on open burning days on ozone action days. We anticipate having this seasonal ban in place during the 2005 ozone season and continuing thereafter.


J.I. Palmer, Jr.  
June 1, 2004  
Page 2

2. **Vehicle Inspection and Maintenance Program.** Hamilton County will institute a vehicle inspection and maintenance program for all of Hamilton County. The program will consist of On-Board Diagnostics-II testing for model year 1996-and-newer and basic inspection & maintenance for pre-1996 vehicles. We anticipate having the program operational during the 2005 ozone season and continuing thereafter.

A letter of commitment with regard to these additional local control measures signed by City of Chattanooga Mayor Bob Corker and Hamilton County Mayor Claude Ramsey is attached.

We thank you for your willingness to work with us in providing for both cleaner air and economic development in the future.

Very truly yours,

  
Robert H. Colby  
Director

cc: Beverly Banister, U.S. EPA – Region 4  
Dick Schutt, U.S. EPA - Region 4  
Brenda Johnson, U.S. EPA – Region 4  
Lydia Wegman, EPA OAQPS  
David Cole, EPA OAQPS  
Tom Helms, EPA OAQPS ←  
Barry Stephens, Tennessee Air Pollution Control Division  
Ron Methier, Georgia EPD - Air Protection Branch

# **Georgia Department of Natural Resources**

**Environmental Protection Division • Air Protection Branch**

**4244 International Parkway • Suite 120 • Atlanta • Georgia 30354**

**404/363-7000 • Fax: 404/363-7100**

**Lonice C. Barrett, Commissioner**

**Carol A. Couch, Ph.D., Director**

June 3, 2004

Ms. Kay Prince  
Chief, Air Planning Branch  
U.S. EPA, Region IV  
Air, Pesticides & Toxics Management Division  
61 Forsyth Street, SW  
Atlanta, Georgia 30303-8909

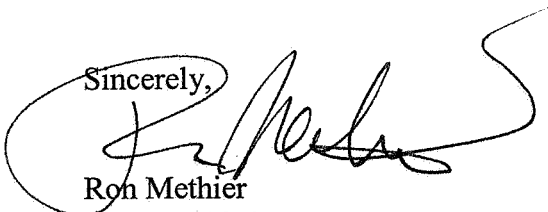
Re: Chattanooga Early Action Compact

Dear Ms. Prince:

Pursuant to our recent discussions with members of your staff, and in coordination with the Chattanooga-Hamilton County Air Pollution Control Bureau, we are pleased to submit the attached Chattanooga Early Action Plan Attainment Demonstration. This modeling demonstration, which is based on the emissions inventory and an episode developed under EPD's Fall Line Air Quality Study and which includes the recently proposed additional control measure of a vehicle inspection and maintenance program in Hamilton County, indicates that the Chattanooga area will attain the 8-hour Ozone NAAQS by the 2007 ozone season. We are submitting this modeling demonstration as a supplement to our March 2004 Early Action Plan.

If you or your staff have any questions regarding this matter or require additional information, please contact Jimmy Johnston at (404) 363-7014.

Sincerely,



Ron Methier  
Branch Chief  
Air Protection Branch

c: Carol Couch, Georgia Environment Protection Division  
Bob Colby, Chattanooga-Hamilton County Air Pollution Control Bureau  
Quincy Styke III, Tennessee Department of Environment and Conservation

# Chattanooga Early Action Plan Attainment Demonstration - Including Impact of Hamilton County Vehicle I/M Program

## General

Georgia EPD submitted an Early Action Plan for Chattanooga area on March 31<sup>st</sup>, 2004. In support of the plan, an air pollution episode (August 11-20, 2000) was simulated using MM5/CMAQ/SMOKE modeling system. Since that submittal, meteorology, emissions, and air quality modeling have been conducted on a 33x33 grid-cell domain at 4-km grid resolution over the Chattanooga area (Figure 1) with additional controls. Comments on episode selection are followed by a summary of the latest modeling results and attainment demonstration.

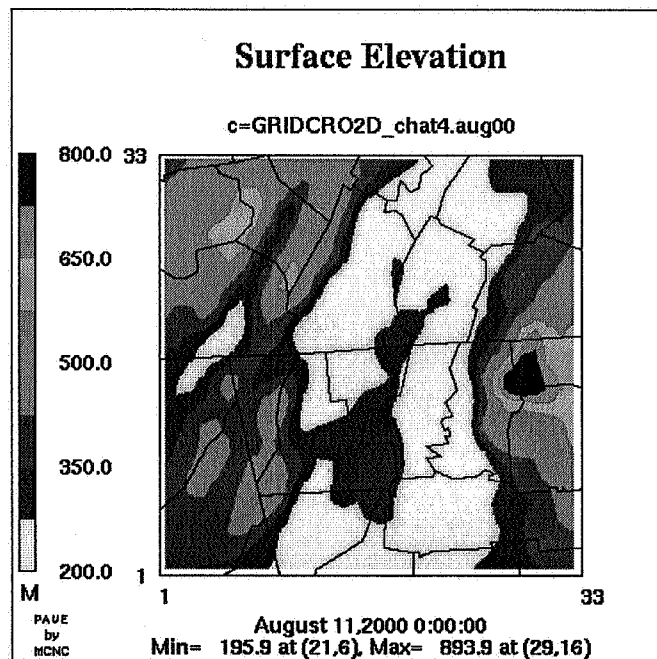


Figure 1 Surface elevation for the at 4-km resolution air quality modeling grid. The grid parameters are, PALPHA = 30.0, PBETA = 60.0, PGAMA = -90.0, XCENT = -90.0, YCENT = 40.0, XORIG = 372000.0, YORIG = -600000.0

## Appropriateness of August 2000 episode for Chattanooga EAC

The selection of the August 2000 episode used in the Chattanooga modeling was based on qualitative measures selected by Georgia Tech personnel for the Fall-Line Air Quality Study (FAQS). This episode was then evaluated using the CART analysis done for the North Georgia Region for the years 1995-2001. ATMOS evaluated the 1996-2002 period using the same CART methodology and selected the episodes using an optimization procedure that produced a best fit for all the varied interest areas of Tennessee, from Memphis to Chattanooga. We do not allege that either of these procedures is better than the other. We believe they are equivalent and produce similar results. For instance out of 17 non-ramp-up days, ATMOS modeled three episodes including 11 exceedance days that represent two of the three key exceedance meteorological regimes for Chattanooga. The August 2000 episode used in Georgia EPD's



modeling also contains two of the three key exceedance meteorological regimes for Chattanooga. Although the number of days modeled are fewer, there are four days classified into normal exceedance bins 11 & 21 out of a total of six non-ramp-up days and these days represent about the same percentage as the 11 exceedance days of 17 total days used by ATMOS.

### Meteorological Modeling

Meteorological modeling at 4-km resolution (40x40 grid nodes with 35 vertical layers) was conducted using MM5 version 3-6. Physics options and other model parameters are identical to the one's used in the 12-km modeling simulation.

### Results of Meteorological Modeling Simulation at 4-km Grid Resolution

Only three meteorological observation stations are located within the 4-km modeling domain. Performance statistics for temperature, wind speed, and wind direction have been computed and are briefly discussed below.

#### *Temperature*

The episode-average Bias (1.93 Kelvin) and Gross Error (1.83 Kelvin) (Figure 2) fail to meet the benchmark with daily averages exhibiting over-prediction of the temperature on most days. Although the Index of Agreement (IOA) is high, the Systematic RMSE is large, suggesting that the temperature field simulated by the model can be improved by the use of more appropriate physics options or other model parameters.

#### *Wind Speed and Direction*

The episode-average wind speed Bias ( $-0.26\text{m/s}$ ) and total RMSE (systematic plus unsystematic) ( $1.81\text{m/s}$ ) (Figure 3) meet the benchmark. However, the contribution of systematic RMSE towards the total is found to be high. Both the computed IOA (0.43) and episode-average wind direction Gross Error ( $51.3$  degrees) fail to meet the benchmark.

#### *Summary*

The statistics described above do not meet the benchmarks (discussed in the EAC submittal of March 31<sup>st</sup> 2004). It should be pointed out that these statistics are useful in making only a general comparison between studies and episodes, since calculation of an episode-mean statistic often conceals important temporal variations that may be quite important in judging the adequacy of a meteorological simulation. Both the size of the modeling domain and number of episode days modeled can, and do, affect the overall statistics. Usually, the error statistics improve with larger sampling sizes and longer averaging periods. Performance statistics at three monitoring stations might not accurately reflect the skill of the modeling simulation in characterizing the meteorological conditions prevalent over the region during this episode. Another factor that might have contributed to the less than satisfactory performance of the meteorological model is the complexity of the terrain in the Chattanooga area. Generally, mesoscale models have difficulty simulating random turbulent processes over complex terrain.

Air quality model performance serves as an additional check on how accurately a meteorological model was able to capture atmospheric dynamics during the episode. In case

the air quality model performance is unusually poor, it is reasonable to further investigate the performance of the meteorological model.

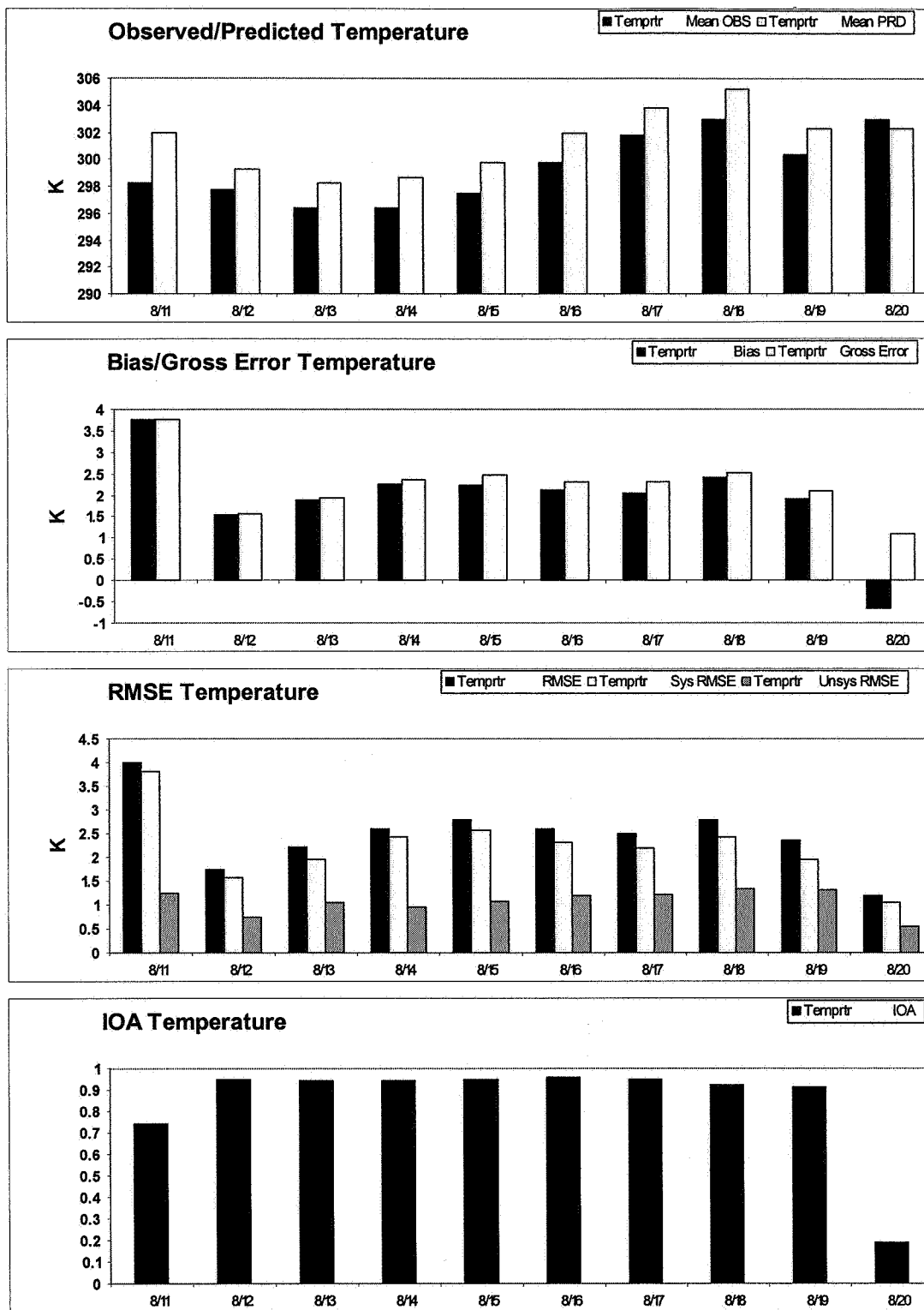


Figure 2: Daily Statistical Temperature Time Series Plot for the 4-Km Grid Resolution Simulation.

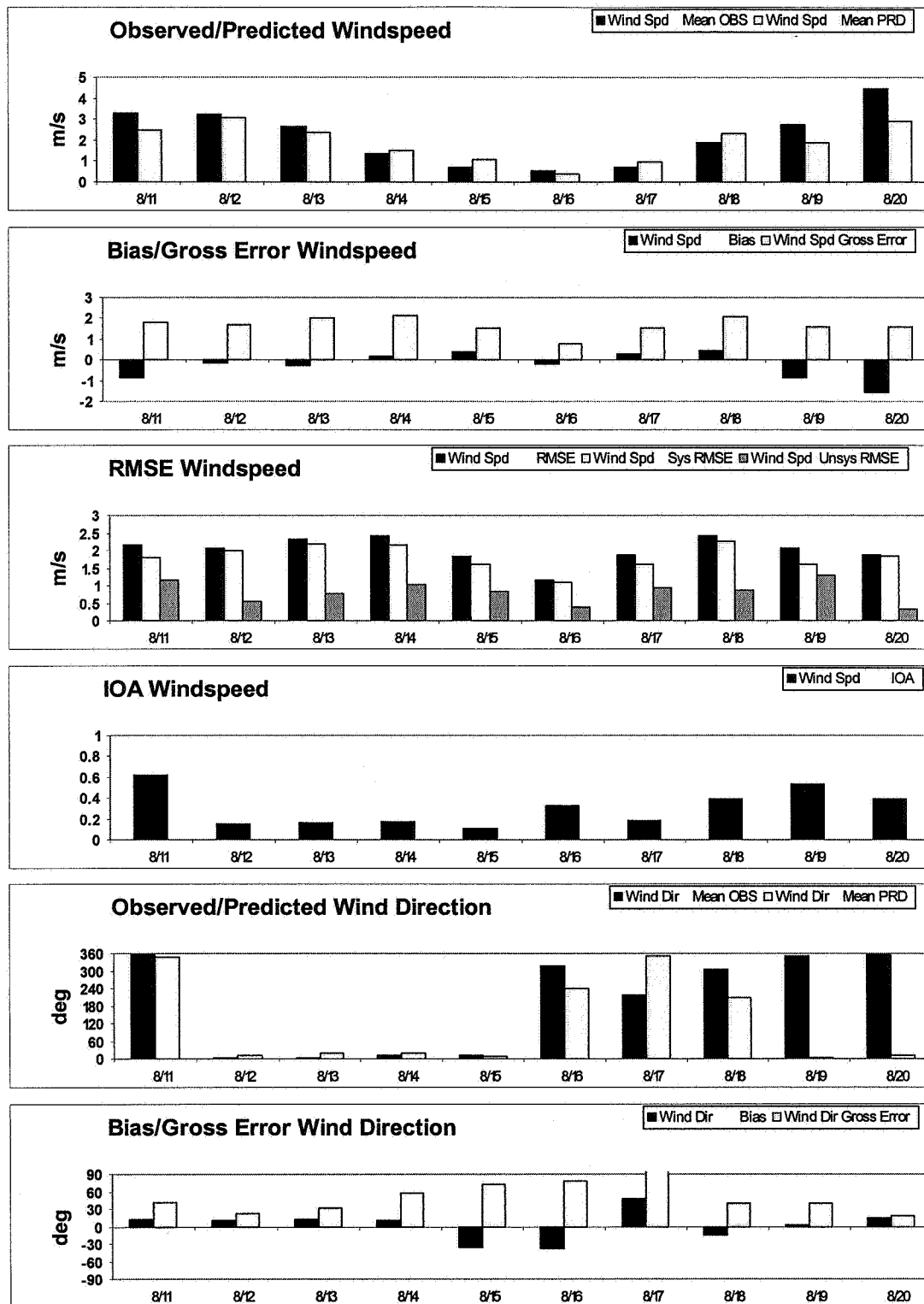


Figure 3: Daily Wind speed and direction time series plot for the 4-km grid resolution simulation.

## Emissions and Air Quality Modeling

Emissions processing for the 4-km grid were conducted using SMOKE version 1.5b. The emissions inventory and associated datasets are identical to the ones submitted as part of the EAC plan on March 31<sup>st</sup>, 2004.

### *Model Performance at The 4-Km Grid Resolution*

Three monitoring stations are located within the 4-km modeling domain. The daily Normalized Bias and Error in peak O<sub>3</sub> concentration at each monitoring station is provided in Table 1(a-c).

Table 1a: Daily Normalized Bias and Error in Peak O<sub>3</sub> Concentration at the monitoring station (Ridge Trail Road) located at in Hamilton County, Tennessee

<b>Date</b>	<b>Number of observations</b>	<b>Normalized Bias (NB) in Peak O<sub>3</sub> Prediction</b>	<b>Normalized Error (NE) in Peak O<sub>3</sub> Prediction</b>
8/13/2000	12	1.23	10.09
8/14/2000	12	8.39	11.93
8/15/2000	11	-0.17	11.22
8/16/2000	11	-1.55	19.09
8/17/2000	11	-3.57	18.84
8/18/2000	15	3.33	11.39
8/19/2000	19	39.48	39.44
Episode Average	91	6.73	17.44

Table 1b: Daily Normalized Bias and Error in Peak O<sub>3</sub> Concentration at the monitoring station (Chattanooga) located in Hamilton County, Tennessee

<b>Date</b>	<b>Number of observations</b>	<b>Normalized Bias (NB) in Peak O<sub>3</sub> Prediction</b>	<b>Normalized Error (NE) in Peak O<sub>3</sub> Prediction</b>
8/13/2000	10	7.98	8.21
8/14/2000	10	3.74	8.72
8/15/2000	11	-2.68	7.13
8/16/2000	10	-4.39	8.07
8/17/2000	11	4.55	15.80
8/18/2000	14	-4.20	12.17
8/19/2000	16	27.20	27.90
Episode Average	81	-4.42	17.06

Table 1c: Daily Normalized Bias and Error in Peak O<sub>3</sub> Concentration at the monitoring station located in Meigs County, Tennessee

Date	Number of observations	Normalized Bias (NB) in Peak O <sub>3</sub> Prediction	Normalized Error (NE) in Peak O <sub>3</sub> Prediction
8/13/2000	10	0.21	6.62
8/14/2000	10	1.85	21.30
8/15/2000	11	-24.60	25.00
8/16/2000	11	-11.40	13.90
8/17/2000	11	-1.08	11.89
8/18/2000	13	-12.80	18.23
8/19/2000	15	17.02	22.30
Episode Average	81	4.61	12.59

The episode-average daily bias and error are well below EPA criteria for adequate model performance.

Time series plots of ozone concentrations observed at monitoring stations and predicted by the model at 4-km grid resolution are provided in Figure 4. With the exception of August 15<sup>th</sup> and 16<sup>th</sup>, when the peak ozone concentration at Ridge Trail Road and Chattanooga monitors is under predicted, the daily peak and diurnal variation in ozone concentration is well simulated on all modeling days. The model tends to over predict the nighttime ozone concentrations at all monitoring stations.

Table 1d: Episode-average Normalized Bias and Error in 8-hour average O<sub>3</sub> Concentration at all monitoring stations

Monitor, County, State	AIRS ID	Daily Normalized Bias in 8-hr average O <sub>3</sub> prediction	Daily Normalized Error in 8-hr average O <sub>3</sub> prediction
Ridge Trail Road, Hamilton, TN	470651011	12.9	15.5
Chattanooga, Hamilton, TN	470650028	-2.03	11.0
Meigs, Meigs, TN	471210104	11.94	14.87

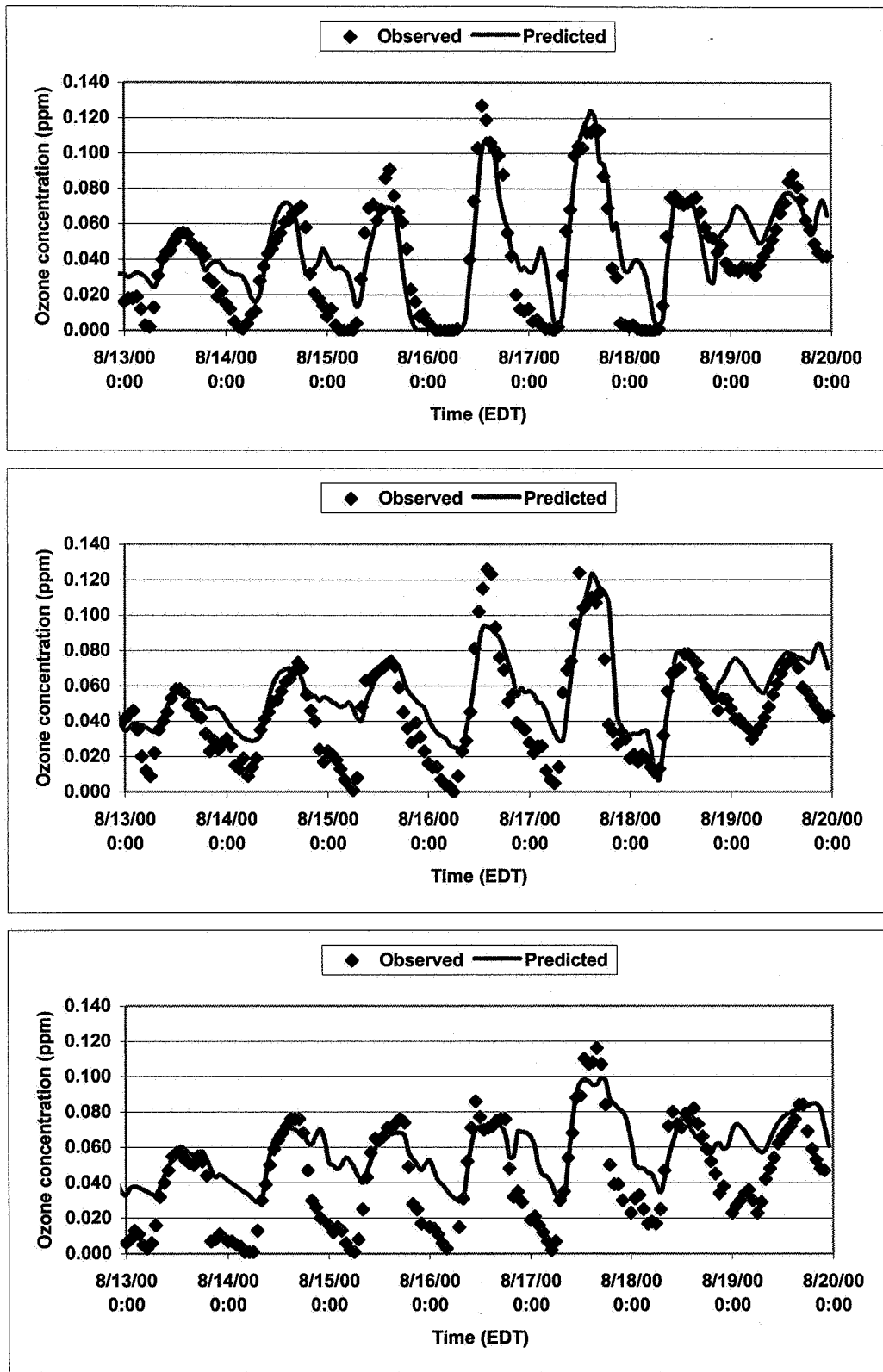


Figure 4: Predicted (At 4-km Grid Resolution) and Observed Hourly Ozone Concentration at Monitoring Stations in Chattanooga (Top), Ridge Trail Road and (Middle) and Meigs (Bottom) County respectively

### Attainment Demonstration Calculations

Air quality model simulations were conducted to demonstrate attainment of the 8-hour ozone NAAQS in the Chattanooga area in 2007. The Base Design Value (BDV) at monitoring stations located in Chattanooga (Table 2) were computed from observations recorded during the 1999 to 2001 ozone seasons (i.e., 2001 design value).

Table 2: Base Design Value at Monitoring Stations in Chattanooga

Monitor, County, State	AIRS ID	8-hour O <sub>3</sub> 2001 Design Value (ppm)
Ridge Trail Road, Hamilton, TN	470651011	0.092
Chattanooga, Hamilton, TN	470650028	0.092
Meigs, Meigs, TN	471210104	0.093

### *Attainment status of the region in 2007 derived from air quality modeling simulations conducted at 4-km resolution*

Model attainment test calculations are shown in Table 3. The predicted concentrations from the modeling simulation at 4-km grid resolution have been used for these calculations. The results indicate that emission reductions from Federal and State emission controls reduce the daily maximum 8-hour O<sub>3</sub> concentration in the Chattanooga area by 12 ppb on average. The Future Design Value (FDV) for all monitoring stations are predicted to be well below 84 ppb.

Preliminary results indicate that "un-monitored" locations adjacent to the Chattanooga area will pass the screening test. A comprehensive analysis will be performed, and submitted to EPA for review before the Early Action Compact is presented for public review.



Table 3: Attainment Status of Monitors in Chattanooga in 2007 derived from air quality model simulations conducted at 4-km grid resolution

Date	Observed (2001) Design Value (ppm)	Max 8-hr Observed (ppm)	Max 8-hr predicted for 2000 (ppm)	Max 8-hr predicted for 2007 (ppm)	If Max-8hr predicted > 0.070 ppm	Relative Reduction Factor	Future (2007) Design Value
<b>Ridge Trail</b>							
13th		0.0499	0.0604	0.0524	0		
14th		0.0614	0.0804	0.0710	1		
15th		0.0738	0.0908	0.0799	1		
16th		0.1021	0.1023	0.0902	1		
17th		0.1055	0.1212	0.1067	1		
18th		0.0728	0.0808	0.0735	1		
19th		0.0730	0.0895	0.0793	1		
	0.092		0.0941	0.0834		0.886	0.0815
<b>Chattanooga</b>							
13th		0.0511	0.0583	0.0506	0		
14th		0.0626	0.0736	0.0658	1		
15th		0.0684	0.0829	0.0747	1		
16th		0.0981	0.1009	0.0902	1		
17th		0.1044	0.1212	0.1067	1		
18th		0.0716	0.0792	0.0720	1		
19th		0.0669	0.0845	0.0758	1		
	0.092		0.0904	0.0809		0.895	0.0823
<b>Meigs</b>							
13th		0.0538	0.0611	0.0531	0		
14th		0.0699	0.0738	0.0653	1		
15th		0.0701	0.0753	0.0659	1		
16th		0.0754	0.0802	0.0694	1		
17th		0.1011	0.1070	0.0933	1		
18th		0.0758	0.0725	0.0663	1		
19th		0.0728	0.0844	0.0715	1		
	0.093		0.0822	0.0720		0.876	0.0814

The modeling results presented above indicate that the Chattanooga area will attain the 8-hour ozone standard in 2007 without additional local controls. This is due in large part to the substantial reduction in regional emissions. Since the Chattanooga area does seem to have sufficient local emissions to cause exceedances of the 8-hour ozone standard, it was prudent and logical to evaluate the effects of possible local emission controls on air quality. The effects of an Inspection & Maintenance Program in Hamilton County on air quality were evaluated. The program is estimated to result in 1.1 tons per day reduction in NO<sub>x</sub> and 2.9 tons per day reduction in VOC from mobile sources in Hamilton County (Table 4).

Table 4: Estimated Emission from mobile sources in Hamilton County in 2007

Year	Mobile Source Emissions in tons/day		
	CO	NOx	VOC
2007 Future Base	116.0	15.3	13.1
2007 Future Controls	91.0	14.2	10.2

The effects of the above-mentioned controls on local air quality were simulated at 4-km grid resolution. Comparison of daily maximum peak 8-hour ozone concentration around the monitoring stations shows a maximum reduction of 1 ppb (Table 5) on August 17<sup>th</sup>.

Table 5a: Daily maximum 8-hour ozone concentration (in ppb) predicted in Hamilton County (located at Ridge Trail Road) with and without mobile source controls

Date	2007 Base	2007 with I/M	Difference
12-Aug	58.74	58.74	0.00
13-Aug	52.41	52.41	0.00
14-Aug	71.01	70.64	0.37
15-Aug	79.89	79.27	0.62
16-Aug	90.21	89.54	0.67
17-Aug	106.70	105.66	1.04
18-Aug	73.49	73.26	0.23
19-Aug	79.27	78.91	0.36

Table 5b: Daily maximum 8-hour ozone concentration (in ppb) predicted in Hamilton County (located in Chattanooga) with and without mobile source controls

Date	2007 Base	2007 with I/M	Difference
12-Aug	56.91	56.90	0.01
13-Aug	50.57	50.55	0.02
14-Aug	65.84	65.70	0.14
15-Aug	74.71	74.38	0.33
16-Aug	90.21	89.54	0.67
17-Aug	106.70	105.66	1.04
18-Aug	71.99	71.74	0.25
19-Aug	75.77	75.59	0.18

Table 5c: Daily maximum 8-hour ozone concentration (in ppb) predicted in Meigs County without mobile source controls

Date	2007 Base	2007 with I/M	Difference
12-Aug	58.94	58.94	0.00
13-Aug	53.12	53.12	0.00
14-Aug	65.29	65.29	0.00
15-Aug	65.93	65.93	0.00
16-Aug	69.36	69.28	0.08
17-Aug	93.32	92.62	0.70
18-Aug	66.32	66.25	0.07
19-Aug	71.49	71.49	0.00

Attainment demonstration calculations (Table 6) indicate a maximum reduction of 0.5 ppb reduction in FDV as a result of mobile source controls in Hamilton County. A difference plot of 8-

hour average concentration predicted by base case and control strategy simulations on August 17<sup>th</sup> is provided in Figure 5. Negative values indicate a reduction in ozone concentrations.

Table 6: Attainment Status of Monitors in Chattanooga in 2007 derived from air quality model simulations with mobile source controls conducted at 4-km grid resolution

Date	Observed (2001) Design Value (ppm)	Max 8-hr Observed (ppm)	Max 8-hr predicted for 2000 (ppm)	Max 8-hr predicted for 2007 (ppm)	If Max- 8hr predicted > 0.070 (ppm)	Relative Reduction Factor	Future (2007) Design Value
<b>Ridge Trail</b>							
13th		0.0499	0.0604	0.0524	0		
14th		0.0614	0.0804	0.0706	1		
15th		0.0738	0.0908	0.0793	1		
16th		0.1021	0.1023	0.0895	1		
17th		0.1055	0.1212	0.1057	1		
18th		0.0728	0.0808	0.0733	1		
19th		0.0730	0.0895	0.0789	1		
	0.092		0.0941	0.0829		0.880	0.0810
<b>Chattanooga</b>							
13th		0.0511	0.0583	0.0506	0		
14th		0.0626	0.0736	0.0657	1		
15th		0.0684	0.0829	0.0744	1		
16th		0.0981	0.1009	0.0895	1		
17th		0.1044	0.1212	0.1057	1		
18th		0.0716	0.0792	0.0717	1		
19th		0.0669	0.0845	0.0756	1		
	0.092		0.0904	0.0804		0.890	0.0819
<b>Meigs</b>							
13th		0.0538	0.0611	0.0531	0		
14th		0.0699	0.0738	0.0653	1		
15th		0.0701	0.0753	0.0659	1		
16th		0.0754	0.0802	0.0693	1		
17th		0.1011	0.1070	0.0926	1		
18th		0.0758	0.0725	0.0663	1		
19th		0.0728	0.0844	0.0715	1		
	0.093		0.0822	0.0718		0.874	0.0813

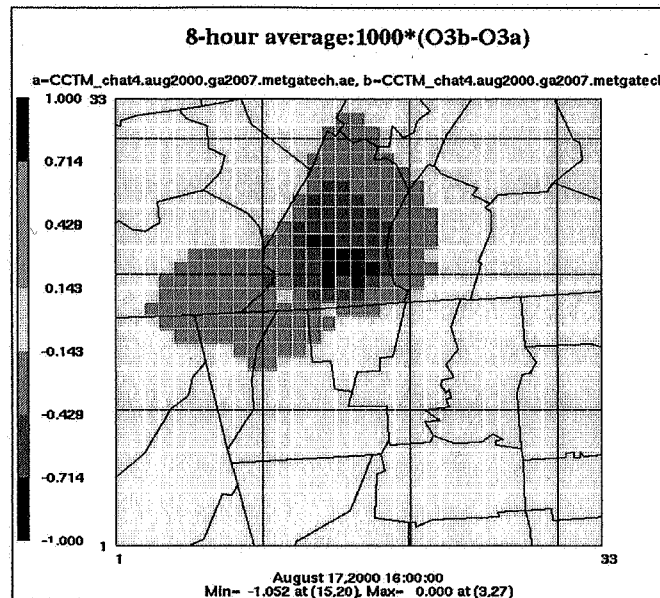


Figure 5 Difference in ozone concentrations (8-hour average) between the control strategy run and base case on August 17<sup>th</sup>

#### Additional comments

Since the preceding analysis of the August 2000 episode shows future 2007 attainment, Weight of Evidence is not required. However, that analysis uses limited data. Excluding ramp-up days the preceding August 2000 episode included 8 days of which half (4 days) were classified in CART bins exhibiting the most frequent excessions of the 8-hour Ozone Standard. Even though Chattanooga monitors only registered 8-hour ozone violations on two of those days (8/16 & 8/17), the other two days (8/15 & 8/19) were classified in CART bin 11, which normally signifies 8-hour ozone violations. Since the meteorological conditions for these two days are conducive to ozone violations, it is possible the concentrations were greater and produced violations in other areas of Chattanooga and not at the monitors. Although this August 2000 modeling episode meets 8-hour ozone attainment guidance, the basis for calculating the Relative Reduction Factor (RRF) and showing attainment is limited to a few days. As additional information and in an effort to make the RRF more robust, we have combined the 3 ATMOS episodes, described in a separate report submitted by Tennessee, with our August 2000 episode.

We cannot use the 3 ATMOS episodes alone to determine the RRF because Tennessee has not modeled the effect of their proposed Inspection and Maintenance Program on the Chattanooga area in their AS-4 emission reduction scenario. However, we think it is conservative to combine all four episodes since the I/M Program will reduce future emissions that lead to lower future year ozone concentrations and a RRF that leads to lower future design values than AS-4 yields. The result from the combination of all four episodes is displayed in Table 7. The maximum 2007 future Design Value is 84.6 ppb and thus demonstrates future attainment. There is one caveat to this combination in that ATMOS used calendar year 2001 as their base year and we used 2000 as our base year. However, we do not think that this 1-year difference will change emissions significantly to render this four-episode combination invalid. The addition of the 3 ATMOS episodes adds 17 days to our analysis and adds to the statistical significance or robustness of the RRF and the attainment demonstration.

**Table 7: Simulated Current- and Future-year (AS-4) 8-Hour Ozone Concentrations (ppb) for the Sequoyah, VAAP, and Meigs County Sites in the Chattanooga EAC Area**

Simulation Date	Ridge Trail Sequoyah		Chattanooga VAAP		Meigs County	
	CY2001	AS-4	CY2001	AS-4	CY2001	AS-4
8/31/1999	95.4	89	95.4	89	74.53	69.09
9/1/1999	83	76.7	94.8	87.2	71.81	67.57
9/2/1999	97.2	90	119.4	114.4	82.14	76.21
9/3/1999	111.9	103.3	111.9	103.3	84.01	76.4
9/4/1999	128	116.4	143	129.8	93.15	89.23
9/5/1999	72.9	67.1	74.97	70.27	65.76	61.4
9/7/1999	90.7	84.4	101.3	95.57	79.74	74.6
9/8/1999	93.5	90	108.6	101.5	88.91	78.69
6/18/2001	83.5	80	86.1	81.69	76.8	73.23
6/19/2001	105	92.8	103	89.58	93	83.45
6/20/2001	130	123.8	130	123.8	89.8	85.06
6/21/2001	97.2	88.6	97.2	88.58	91.4	82.11
7/6/2002	91.6	83.4	92.23	83.35	87.75	79.68
7/7/2002	100.7	90.9	100.7	90.85	82.23	75.22
7/8/2002	105.5	88.9	107.5	88.92	81.58	74.62
7/9/2002	96.2	88.3	92.76	85.82	97.07	88.16
7/10/2002	89.9	83.3	89.92	83.15	87.01	80.25
	CY 2000 With I/M		CY 2000 With I/M		CY 2000 With I/M	
8/14/2000	80.4	70.6	73.6	65.7	73.8	65.3
8/15/2000	90.8	79.3	82.9	74.4	75.3	65.9
8/16/2000	102.3	89.5	100.9	89.5	80.2	69.3
8/17/2000	121.2	105.7	121.2	105.7	107	92.6
8/18/2000	80.8	73.3	79.2	71.7	72.5	66.3
8/19/2000	89.5	78.9	84.5	75.6	84.4	71.5
Average	97.3	88.4	99.6	90.8	83.5	75.9
<b>EDV Calculations</b>						
RRF		0.909		0.912		0.909
2000-2002 DV		93		92		93
2007 EDV (2002)		84.6		83.9		84.6
1999-2001 DV		92		92		90
2007 EDV (2003)		83.7		83.9		81.8

2 years